

CLAIMS

What is claimed is:

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1. A microelectronic package, comprising:
a microelectronic die having an active surface and at least one side;
encapsulation material adjacent said at least one microelectronic die side, wherein
said encapsulation material includes at least one surface substantially planar to said
microelectronic die active surface;
a first dielectric material layer disposed on at least a portion of said
microelectronic die active surface and said encapsulation material surface; and
at least one conductive trace disposed on said first dielectric material layer and in
electrical contact with said microelectronic die active surface, wherein said at least one
conductive trace extends adjacent said microelectronic die active surface and adjacent
said encapsulation material surface.
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2. The microelectronic package of claim 1, further including at least one
additional dielectric material layer disposed over said at least one conductive trace and
said first dielectric material layer.
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3. The microelectronic package of claim 2, wherein at least a portion of said
at least one conductive trace extends through and resides on said at least one additional
dielectric material layer.

4. The microelectronic package of claim 1, wherein said microelectronic die further includes a back surface; and further including at least one heat dissipation device in thermal contact with said microelectronic die back surface.

5. A method of fabricating a microelectronic package, comprising:
providing at least one microelectronic die having an active surface and at least one side;
abutting a protective film against said at least one microelectronic die active surface;
encapsulating said at least one microelectronic die with an encapsulation material adjacent said at least one microelectronic die side, wherein said encapsulating material provides at least one surface of said encapsulation material substantially planar to said microelectronic die active surface; and
removing said protective film.

6. The method of claim 5, further including:
forming at least one dielectric material layer on at least a portion of said microelectronic die active surface and said encapsulation material surface;
forming a via through said at least one dielectric material layer to expose a portion of said microelectronic die active surface; and
forming at least one conductive trace on said at least one dielectric material layer which extends into said via to electrically contact said microelectronic die active surface,

8 wherein said at least one conductive trace extends adjacent said microelectronic die
9 active surface and adjacent said encapsulation material surface.

1 7. The method of claim 5, further including forming at least one additional
2 dielectric material layer disposed over said at least one conductive trace and said at least
3 one dielectric material layer.

1 8. The method of claim 7, wherein forming said at least one conductive trace
2 on said at least one dielectric layer further includes forming at least a portion of said at
3 least one conductive trace to extend through and reside on said at least one additional
4 dielectric material layer.

1 9. The method of claim 5, further including thermally contacting a heat
2 dissipation device with a back surface of said microelectronic die.

1 10. A method of fabricating a microelectronic package, comprising:
2 providing an adhesive protective film suspended on a substantially rigid frame;
3 attaching an active surface of at least one microelectronic die to said adhesive
4 film;
5 encapsulating said at least one microelectronic die with an encapsulation material
6 adjacent at least one side of said microelectronic die, wherein said encapsulating material

7 provides at least one surface of said encapsulation material substantially planar to said
8 microelectronic die active surface; and
9 removing said adhesive protective film.

1 11. The method of claim 10, further including:
2 forming at least one dielectric material layer on at least a portion of said
3 microelectronic die active surface and said encapsulation material surface;
4 forming a via through said at least one dielectric material layer to expose a portion
5 of said microelectronic die active surface; and
6 forming at least one conductive trace on said at least one dielectric material layer
7 which extends into said via to electrically contact said microelectronic die active surface,
8 wherein said at least one conductive trace extends adjacent said microelectronic die
9 active surface and adjacent said encapsulation material surface.

1 12. The method of claim 10, further including forming at least one additional
2 dielectric material layer disposed over said at least one conductive trace and said at least
3 one dielectric material layer.

1 13. The method of claim 12, wherein forming said at least one conductive
2 trace on said at least one dielectric layer further includes forming at least a portion of said
3 at least one conductive trace to extend through and reside on said at least one additional
4 dielectric material layer.

1 14. The method of claim 10, further including thermally contacting a heat
2 dissipation device with a back surface of said microelectronic die.

1 15. A method of fabricating a microelectronic package, comprising:
2 providing at least one microelectronic die having an active surface, a back
3 surface, and at least one side;
4 attaching said at least one microelectronic die back surface to a heat dissipation
5 device;
6 abutting a protective film against said at least one microelectronic die active
7 surface;
8 encapsulating said at least one microelectronic die and said heat dissipation
9 device with an encapsulation material, wherein said encapsulating material provides at
10 least one surface of said encapsulation material substantially planar to said
11 microelectronic die active surface; and
12 removing said protective film.

1 16. The method of claim 15, further including:
2 forming at least one dielectric material layer on at least a portion of said
3 microelectronic die active surface and said encapsulation material surface;
4 forming a via through said at least one dielectric material layer to expose a portion
5 of said microelectronic die active surface; and

6 forming at least one conductive trace on said at least one dielectric material layer
7 which extends into said via to electrically contact said microelectronic die active surface,
8 wherein said at least one conductive trace extends adjacent said microelectronic die
9 active surface and adjacent said encapsulation material surface.

1 17. The method of claim 15, further including forming at least one additional
2 dielectric material layer disposed over said at least one conductive trace and said at least
3 one dielectric material layer.

1 18. The method of claim 17, wherein forming said at least one conductive
2 trace on said at least one dielectric layer further includes forming at least a portion of said
3 at least one conductive trace to extend through and reside on said at least one additional
4 dielectric material layer.

1 19. The method of claim 15, further including thinning said at least one
2 microelectronic die prior to attaching said at least one microelectronic die back surface to
3 a heat dissipation device.

1 20. A method of fabricating a microelectronic package, comprising:
2 providing an adhesive protective film suspended on a substantially rigid frame;
3 attaching a back surface of at least one microelectronic die to said adhesive film;

4 abutting a protective film against an active surface of said at least one
5 microelectronic die;
6 encapsulating said at least one microelectronic die with an encapsulation material
7 adjacent at least one side of said microelectronic die, wherein said encapsulating material
8 provides at least one surface of said encapsulation material substantially planar to said
9 microelectronic die active surface;
10 removing said protective film; and
11 removing said adhesive protective film.

1 21. The method of claim 20, further including:
2 forming at least one dielectric material layer on at least a portion of said
3 microelectronic die active surface and said encapsulation material surface;
4 forming a via through said at least one dielectric material layer to expose a portion
5 of said microelectronic die active surface; and
6 forming at least one conductive trace on said at least one dielectric material layer
7 which extends into said via to electrically contact said microelectronic die active surface,
8 wherein said at least one conductive trace extends adjacent said microelectronic die
9 active surface and adjacent said encapsulation material surface.

1 22. A method of fabricating a microelectronic package, comprising:
2 providing an adhesive protective film suspended on a substantially rigid frame;

3 attaching a back surface of at least one microelectronic die to at least one heat
4 dissipation device;

5 attaching a back surface of said at least one heat dissipation device to said
6 adhesive film;

7 abutting a protective film against an active surface of said at least one
8 microelectronic die;

9 encapsulating said at least one microelectronic die with an encapsulation material
10 adjacent at least one side of said microelectronic die, wherein said encapsulating material
11 provides at least one surface of said encapsulation material substantially planar to said
12 microelectronic die active surface;

13 removing said protective film; and

14 removing said adhesive protective film. .

1 23. The method of claim 22, further including:

2 forming at least one dielectric material layer on at least a portion of said
3 microelectronic die active surface and said encapsulation material surface;

4 forming a via through said at least one dielectric material layer to expose a portion
5 of said microelectronic die active surface; and

6 forming at least one conductive trace on said at least one dielectric material layer
7 which extends into said via to electrically contact said microelectronic die active surface,
8 wherein said at least one conductive trace extends adjacent said microelectronic die
9 active surface and adjacent said encapsulation material surface.

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